

CLAIMS

1. An exhaust gas cleaning-up device, comprising an absorbent comprising a zeolite having a three-dimensional structure in which series of stacked rings consisting of a specific number of members intersect series of stacked rings consisting of a different specific number of members, said absorbent being arranged in an exhaust passage of an internal combustion engine.

2. The exhaust gas cleaning-up device according to claim 1, wherein the axes of stacked adjacent rings consisting of the same number of members are out of alignment.

3. The exhaust gas cleaning-up device according to claim 1, wherein the series of stacked rings consisting of said specific number of members have a function of absorbing HC contained in exhaust gas and the series of stacked rings consisting of said different specific number of members have a function of hindering the desorption of the absorbed HC.

4. The exhaust gas cleaning-up device according to claim 1, wherein said specific numbers of members are 10 and 12.

5. The exhaust gas cleaning-up device according to claim 4, wherein the zeolite has pores formed by the series of stacked 10-membered rings to extend in the direction corresponding to one of the three dimensions of the three-dimensional structure and pores formed by the series of stacked 12-membered rings to extend in the directions corresponding to the other two dimensions of the three-dimensional structure.

6. The exhaust gas cleaning-up device according to claim 1, wherein the silica/alumina ratio of the zeolite is determined to be within the range of 20 to 1500.

7. The exhaust gas cleaning-up device according to claim 6, wherein the silica/alumina ratio of the zeolite is determined to be within the range of 20 to 300.

8. The exhaust gas cleaning-up device according to 5 claim 1, wherein the silica/alumina ratio of the zeolite is determined so that breaks are not produced in the structure of the zeolite at 900°C.

9. The exhaust gas cleaning-up device according to 10 claim 1, wherein the zeolite is arranged on a support and the amount of the zeolite supported is determined to be within the range of 90g/L to 130g/L.

10. The exhaust gas cleaning-up device according to claim 1, wherein the zeolite contains one or more elements chosen from among Ag, Mn, Fe, Ni and Cu.

15 11. The exhaust gas cleaning-up device according to claim 1, wherein said absorbent is arranged on a support, and a three-way catalyst is arranged on a downstream-side part of the support.

20 12. The exhaust gas cleaning-up device according to claim 1, wherein said absorbent is arranged on a support, and a three-way catalyst layer is formed on the absorbent.

13. The exhaust gas cleaning-up device according to claim 12, wherein the three-way catalyst layer contains Ce.

14. The exhaust gas cleaning-up device according to 25 claim 12, wherein the amount of the zeolite on the support is determined so that the zeolite supported has a capacity to absorb a larger amount of HC than the total amount of HC discharged from the internal combustion engine from the time when the internal combustion engine is cold-started 30 until the three-way catalyst layer becomes activated.

15. The exhaust gas cleaning-up device according to claim 12, wherein an upstream-side three-way catalyst is arranged upstream of said support.

16. The exhaust gas cleaning-up device according to claim 15, wherein the upstream-side three-way catalyst is arranged on a support formed to have a cell density higher than the cell density of said support.

5 17. The exhaust gas cleaning-up device according to claim 15, wherein the amount of the zeolite arranged on the support is determined so that the zeolite supported has a capacity to absorb a larger amount of HC than the total amount of HC discharged from the internal combustion engine
10 from the time when the internal combustion engine is cold-started until the upstream-side three-way catalyst becomes activated.

18. The exhaust gas cleaning-up device according to claim 15, wherein said absorbent has the HC desorbing capacity which becomes greatest at a temperature of 160°C or higher.

19. An exhaust gas cleaning-up device, comprising an absorbent comprising CON type zeolite, arranged in an exhaust passage of an internal combustion engine.

20 20. The exhaust gas cleaning-up device according to claim 19, wherein said zeolite is SSZ-26 or SSZ-33 having a three-dimensional structure in which series of stacked rings intersect each other.